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Department of Physiology & Biophysics
University of Washington
School of Medicine
Seattle 5, Washington

June 12, 1963

Scientific Director
Office of Naval Research
Washington 25, D. C.

NR:113-150
Contract: Nonr-477(07)
University of Washington

Dear Sir:

Final scientific report for period covering May 1, 1952 through October 31, 1962

This grant has come to a conclusion having a total of 31 publications credited to it. Many scientific reports have been delivered based on information derived from this support.

The early work was concerned with central neural control over visceral functions such as circulation and bladder functions. This later broadened into studies concerned with food and water intake and neural control of respiration. As techniques developed the study of visceral related behavior was undertaken in the investigations of centrally induced emotion and motivation. The investigation of non motivated behavior was also begun.

The grant terminated formally in 1961 but permission was given to carry over the small amount remaining in the grant. During the last two years this money has been utilized to continue and enlarge work started by this grant support, specifically the investigation of the connections of the frontal lobes of monkeys. This work fits well into the scope of the grant because of the important control this region of the brain exerts over visceral function. As a corollary of this work pre and post lobectomy moving pictures have been taken of five different species of monkeys to assess the similarities or differences in behavior exhibited.

The complete list of publications is as follows:

1. Hyperactivity and pulmonary edema from rostral hypothalamic lesions in rats. Maire, F. W. and Patton, H. D., Amer. J. Physiol. 1954, 178, 315-320.

2. Hyperactivity and pulmonary edema from rostral lesions in rats. (Abstract) Maire, F. W. and Patton, H. D., Fed. Proc., 1955, 14, 97-98.

3. Factors influencing vasomotor center activity (Abstract). Tang, P. C., Maire, F. W., and Amassian, V. E. Amer. J. Physiol., 1954, 179, 679.

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4. Localization of diencephalic and brain stem areas controlling micturition reflex in cat. Tang, P. C. and Ruch, T. C., Fed. Proc., 1954, 13, 151. (Abstract)

5. Non-neurogenic basis of bladder tonus. Tang, P. C. and Ruch, T. C. Amer. J. Physiol., 1955, 181, 249-257.

6. Neural structures involved in the genesis of "preoptic pulmonary edema," gastric erosions and behavior changes. Maire, F. W. and Patton, H. D. Amer. J. Physiol., 1956, 184, 345-350.

7. The role of the splanchnic nerve and adrenal medulla in the genesis of "preoptic pulmonary edema." Maire, F. W. and Patton, H. D. Amer. J. Physiol., 1956, 184, 351-356.

8. An adjustable implanted electrode for stimulating the brain of the unanesthetized animal. Maire, F. W., Electroenceph. clin. Neurophysiol. 1956, 8, 334-337.

9. Levels of the brain stem and diencephalon controlling the micturition reflex. Tang, P. C., J. Neurophysiol., 1955, 18, 583-595.

10. Localization of brain stem and diencephalic areas controlling the micturition reflex. Tang, P. C. and Ruch, T. C., J. Comp. Neurol., 1956, 106, 213-245.

11. Eating and drinking responses elicited by diencephalic stimulation in unanesthetized rats. Maire, F. W. Fed. Proc., 1956, 15, 124.

12. Stimulus bound eating and drinking responses elicited by diencephalic stimulation (Abstract). Proc. 20th int. physiol. Congr., 1956, 788-789.

13. Non-neurogenic basis of bladder tonus. Tang, P. C. and Ruch, T. C. Amer. J. Physiol., 1955, 181, 249-257.

14. Levels of the brain stem and diencephalon controlling the micturition reflex. Tang, P. C. J. Neurophysiol., 1955, 18, 583-595.

15. Respiratory influence on vasomotor center activity (Abstract). Tang, P. C. and Maire, F. W. Fed. Proc., 1955, 14, 151-152.

16. Interrelations of CO_2, O_2 and vagal influences on respiratory centers (Abstract). Tang, P. C. and Young, A. C. Fed. Proc., 1956, 15, 184.

17. Space time relationships in somesthetic localization. Jones, F.N., Science, 1956, 124, 484.

18. Respiratory influence on the vasomotor center. Tang, P. C., Maire, F. W. and Amassian, V. E. Amer. J. Physiol., 1957, 191, 218-224.

19. An hypothalamic mechanism capable of producing fatal lung hemorrhage and edema. Patton, H. D. pp. 106-119 in Electrical Studies on the Unanesthetized Brain, Ramey, E. R. and O'Doherty, D. S., eds. Paul B. Hoeber, Inc., New YOrk, 1960.

20. Central control of the bladder. Ruch, T. C. Chapter 48 in Handbook of Physiology, Field, J., ed., Washington, D. C., American Physiological Society, 1960.

21. Emotional behavior produced by hypothalamic stimulation. Nakao, H, and Patton, H. D. Amer. J. Physiol., 1958, 194, 411-418.

22. Effects of temperature and food deprivation on random activity of Macaca Mulatta. DeVito, J. L. and Smith, O. A., Jr. J. comp. physiol. Psychol., 1959, 52, 29-32.

23. An approach to quantifying the qualitative aspects of behavior. Smith, O. A., Jr., and DeVito, J. Science, 1959, 129, 1229-1231.

24. Hypothalamic influence on left ventricle performance. In manuscript. (Abstract with same title by R. F. Rushmer and O. A. Smith, Jr. in Fed. Proc., 1958, 17, 137.)

25. Comparative spontaneous activity in five species of monkeys. Smith, O. A. Jr. and DeVito, June L. J. comp. physiol. Psychol., 1959, 52, 685-688.

26. Central control of the bladder. Ruch, T. C. Chapter 48 in Handbook of Physiology. Section 1. Neurophysiology, volume 2, J. Field, ed., Washington, D. C., American Physiological Society, 1960.

27. Motivational concomitants of eating elicited by stimulation of the anterior thalamus. Smith, O. A., Jr., McFarland, W. L. and Teitelbaum, H. J. comp. physiol. Psychol., 1961, 54, 484-488.

28. Performance in a shock avoidance conditioning situation interpreted as pseudoconditioning. Smith, O. A., McFarland, W. L. and Taylor, E. M. Journal of Comparative and Physiological Psychology 1961, 54: 154-158.

29. Comparative spontaneous activity in five species of monkey. Smith, O. A., Jr. and DeVito, June L. J. comp. physiol. Psychol., 1959, 52, 685-688.

30. Projections of the prefrontal lobe in monkey. DeVito, June L. and Smith, O. A., Jr. Fed. Proc., 1960, 19, 281.

31. An hypothalamic mechanism capable of producing fatal lung hemorrhage and edema. Patton, H. D. Conference on electrical studies on the unanesthetized brain. Publ. 1960, Chapt. 5, Paul B. Hoeber, Inc., N. Y.

While this contract has come to an end, the work started under it will go forward under other research grants.

Respectfully submitted,

T. C. Ruch
Principal Investigator